Modelling determinants of a cost accounting system: Mixed methodology and logistic regression

Abstract: Mixed methodology is becoming increasingly significant in several scientific research areas. Empirical management and cost accounting research attempt to integrate quantitative and qualitative methods and combine theories generally associated with incommensurable paradigms. Furthermore, mixed methods research could provide a more comprehensive understanding of cost accounting research by establishing a prevailing means of validation of research findings. However, this has also been criticised considerably in the social science aspects especially due to failings of presenting a vibrant philosophical foundation to produce valid knowledge statements and also in circumstances of a concept of triangulation is emerged as a mean of validation. As a methodological note on the analytical aspects, logistic regression model has been used in various studies of management and cost accounting research. However, there are criticisms over the presentations of the logistic model which has led to a misinterpretation of research findings. As per the usage of these methodologies in various contexts are concerned, scholars in management and cost accounting have argued that Sri Lanka seems to be more profound in methodology but the methodology should be determined by the research question and it is not given. Sri Lanka is perceived to be an empirical laboratory for management research as management practices in this country are different or distinctive. Hence, reporting on distinctiveness of practices will be very appealing to international audiences. The purpose of this paper is to illustrate how the mixed methodology has been adopted and how the logistic regression model was used to model the determinants for the demand for cost accounting systems in Sri Lanka as a developing country. A cost accounting system (CAS) has been used for decision support, financial planning and control as well. Empirical evidence has shown that different factors have influenced on demand for CAS but again has shown mixed results and there is a lack of evidence from the developing country or emerging economy context as well. Hence, this research study attempts at bridging the gap between the literatures by modelling the determinants for the demand for a CAS within an emerging economy such as Sri Lanka. Logistic regression model has identified that the market competition, size, desire and need of the management, quality of the report generation and changing dynamics as significant predictors for the demand for a CAS. Thematic analysis has been adopted to analyse the qualitative data gathered to achieve an in-depth understanding of CAS. This paper allows understanding how mixed methods research is conceptualised across these studies. The findings show a range of perceived strengths and weaknesses/ limitations identified and opportunities and risks attributed to this approach as well.

Key words: Mixed methodology, Modelling, Logistic Regression, Sri Lanka

1. Introduction

Empirical management and cost accounting research attempt to integrate quantitative and qualitative methods and combine theories generally associated with incommensurable paradigms. Furthermore, mixed methods research could provide a more comprehensive understanding of cost accounting research by establishing a prevailing means of validation of research findings. The synergy between theory and methods also has provided a basis for the enhancement of managerial accounting research (inter alia, Atkinson et al., 1997).

Cost Accounting System (CAS) is the key financial control system which monitors the results of all activities and all other control systems (Anthony and Govindarajan, 2004; Lucey, 2008). Relevant literature (inter alia, Evans & Bellamy, 1995; Lucey, 1996; Upchurch, 2002; Anthony and Govindarajan, 2004; Lucey, 2008) reveals that a timely and relevant CAS can serve as a database for the full cost of resources used to aid more efficient and effective decision support, financial planning and control systems. CAS depends theoretically on the degree of market competition in relation to price, product, distribution and quality, the variables of manufacturing process, the demand characteristics of a firm's products and services, indirect and direct costs, the establishment of information specifications reports, size, the changing dynamics of an organisation, etc. (Karmarkar *et al.*, 1989; Ginzberg and Shillinglaw, 1984). Hence, an initial function could be drawn as:

$$\begin{aligned} &Demand\ for\ CAS\ (Dependent\ variable) \\ &\quad = \alpha + \beta 1\ size + \beta 2\ market\ competition\ (type\ \&\ intensity) \\ &\quad + \beta 3\ report\ generation + \beta 4\ changing\ dynamics\ of\ an\ organisation \\ &\quad + \beta 5\ indirect\ \&\ direct\ cost + \varepsilon \end{aligned}$$

Therefore, according to the logistic model discussed earlier (1.Introduction), the dependant variable (Y) will be the demand for a CAS whereas the independent variables (X_i) will be the determinants of a CAS in the main research study. Furthermore, a similar model could be tested for the probability of successful performance (Y) and the determinants of a CAS (X_i) as well.

However, Karmarkar *et al*. (1989) indicate that usually little is known empirically about the determinants of CAS. Furthermore, empirical research has shown mixed results on the determinants of CAS (Carvalho *et al*., 2012) as well. Some studies (Karmarkar *et al*., 1989; Cavalluzzo *et al*., 1998; Krishnan, 2005) show that CAS has a positive association with market competition, while others (Khandwalla, 1972; Libby and Waterhouse, 1996; Lyn and Yu, 2002) show that there is neither consistent nor positive association between increased competition and higher usage and demand for CAS. In fact, Lyn and Yu (2002) have shown that resistance to organisational change has not been an issue for a successful CAS, while Cohen and Kaimenaki (2011) reveal that the majority of CAS structures have a positive influence on cost information quality dimensions (Perera and Thrikawala, 2010) but not on their capability to generate user-customised specifications reports.

To date, studies on CAS in less developed countries (LDCs) are rare in the literature (Lyn and Yu, 2002) due to the fact that most research on LDCs concentrates on financial accounting (FA) (Hopper *et al*., 2009) as well. Also, a prominent amount of literature has discussed and conducted within developed country context. Therefore, even if the LDCs adopt western developed country regulations, the studies based in USA or any other developed country context would not depict the picture of a developing country due to inconsistencies in several economic factors such as poor infrastructure, low adoption of

Information and Communication Technologies (ICT) and also factors such as social, political, cultural, etc (Lyn and Yu, 2002; Carvalho *et al*., 2012). Hence, it suggests for further studies to determine the validity of these findings in the context of developing and especially in an emerging market as well.

Given the background of the study, there seems to be an imminent need and opportunity to understand the relationship between demand for CAS and its determinant factors within the changing dynamics of organisations in a developing country context. Hence, in its broadest form, the proposed research will address this overall central research question:
What are the determinant factors for a demand for CAS with the impact of changing dynamics and how these factors influence in a developing country context?

2. Literature Review

Mixed methodology has been widely discussed in various research areas and it is becoming increasingly significant and popular approach in several scientific research areas and various fields of sociology, psychology, education and health sciences, etc., as well. Mixed methodology is the combined use of quantitative and qualitative methods in the same study. This method of research is a growing area of methodological choice for many academics and researchers from across a variety of discipline areas (Cameron, 2011).

This has been defined in social research as a technique that mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study (Johnson and Onwuegbuzie, 2004). Jick (1979) has mentioned the fact that the conception that qualitative and quantitative methods should be viewed as complementary rather than rivalry camps. Furthermore, this has been discussed also as a concept of triangulation which has been emerged as a mean of validation. Triangulation also has been broadly defined by Denzin (1978) as the combination of methodologies in the study of the same phenomenon.

For the last decade, there has been considerable interest raised in using mixed methodological designs for research (Creswell, 2003; Johnson and Onwuegbuzie, 2004; Creswell and Tashakkori, 2007; Gorard and Cook, 2007; Johnson et al., 2007; Tashakkori and Creswell, 2008; Symonds and Gorard, 2010; Muskat *et al*., 2012). Also, Muskat *et al.* (2012) have quoted the work of Johnson and Onwuegbuzie (2004) to show how the methodological pluralism or variety enables researchers to increase both the scope and the level of possible analysis.

Moreover, there has been widely discussed on strengths and weaknesses of this method as well. As per the strength and the value of this method is concerned, it has been identified as a method which provides researchers with a broader set of analysis and a more substantial way of data interpretation. Also, mixed method research is beneficial to use in order to produce a research output that is of higher value than single approaches in qualitative or quantitative methods (Muskat *et al*., 2012). Moreover, Muskat *et al* (2012) have shown that the mixed methodology, qualitative data collection combined with quantitative data analysis would lead to potentially more robust results. Also, it further has shown that the outcomes outlined in the study could not be anticipated with one method only. Instead of only having the accumulated expertise of all interviewees for consideration, a new level of results has become apparent where less biased conclusions additionally were drawn from the qualitative step as well

(Muskat *et al*.,2012) . Hence, this implies the fact that it reduces the biasness by using a quantitative layer within the qualitative research. Additionally, Creswell and Plano Clark (2007) have mentioned the fact that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems that either approach alone.

As per the challenges of this method are concerned, Creswell *et al.* (2003) point out that a central challenge for mixed methods research is the explicit clarification of several key aspects, such as to identify the main purposes of using a mixed design, to clarify the factors analysed when determining the type of mixed design and to describe the decisions made when assigning the respective weight (equal or different) to each methodological part of the research. Furthermore, in relation to the implementation of data collection, researchers should specify whether the mixed design is sequential or simultaneous (Lopez-fernandes and Molina-Azorin. 2011).

As a methodological note on the quantitative analytical aspects, logistic regression model has been used in various studies of management and cost accounting research. However, there are criticisms over the presentations of the logistic model which has led to a misinterpretation of research findings. In the research paper, Learning orientation, organisational commitment and talent retention across generations, D'Amato and Herzfeldt (2008) have used the logistic regression to test the hypothesised relationships between learning orientation, development intention, organisational commitment and intention to stay across generation. Also, they have quoted some work of Agresti (1996); Tabachnick and Fidell (2001); Kleinbaum *et al.*,(1998) to show how binomial logistic regression had been performed to identify the unique contribution of the independent variables. Also, it has shown that the above models are appropriate when the dependent variable is a simple yes and no decision (dichotomous), the underlying random elements of the distribution are assumed to follow a binomial distribution, and the error terms of the regression follow a logistic distribution. Logistic regression also have different types where Binomial (or binary) logistic regression is one form of regression which is used when the dependent is a dichotomy and the independents are of any type as mentioned above. Another form is Multinomial logistic regression and it exists to handle the case of dependents with more classes than two. Ordinal logistic regression is also another form of logistic regression and it is preferred to multinomial logistic regression when multiple classes of the dependent variable can be ranked.

Moreover, logistic regression can be used to predict a dependent variable on the basis of continuous and/or categorical independent variables and to determine the percent of variance in the dependent variable explained by the independents, to rank the relative importance of independents; to assess interaction effects; and to understand the impact of covariate control variables. The impact of predictor variables is usually explained in terms of odds ratios. Logistic regression applies maximum likelihood estimation after transforming the dependent into a logit variable (the natural log of the odds of the dependent occurring or not) and then it estimates the odds of a certain event occurring. Furthermore, the predictive success of the logistic regression can be assessed by looking at the classification table which shows the correct and incorrect classifications of the dichotomous, ordinal, or polytomous dependent. Goodness-of-fit tests such as the likelihood ratio test are available as indicators of model appropriateness also are the Wald statistic to test the significance of individual independent variables (Garson, 2008).

The logistic regression model is further discussed referring to Statistical Methods, the book which is written by Freund and Wilson (2003).

The standard linear model:

Equation1: $Y = \beta_0 + \beta_1 X + \varepsilon$, where Y is the dependant variable, β_0 and ε are constants, β_1 is the coefficient of the independent/predictor variable X

The logistic regression model:

Equation2: $Y = \frac{(\exp(\beta_0 + \beta_1 X))}{(1+\exp(\beta_0 + \beta_1 X))} + \varepsilon$, where Y is the dependant variable, β_0 and ε are constants, β_1 is the coefficient of the independent/predictor variable X

The equation 1 is a straight line fit of the data, while the equation 2 gives a special curved line and both have been found appropriate in a wide variety of situation. If a simple linear regression model using weighted least squares violates the constraints of the model, the curvilinear model could be used and one such model is the logistic regression model which has a wide range of applicability (Freund and Wilson, 2003).

Apart from quantitative analysis, qualitative analysis also has a major role to play in an mixed methodology approach. Although there are several variants of qualitative methodology (naturalistic paradigm) such as grounded theory, discourse analysis, narrative analysis and others, this study employs content analysis because of several reasoned justifications.

Firstly, it is more suitable for analysing the "content" of communicated texts. Relevant literature (Hsieh, Hsien and Shannon, 2005; Given, 2008; Berg, 2009) indicates that there are three types of content analysis, namely, conventional, directed and summative content analysis. The main differences between them lies in the application of thematic coding, origins of thematic coding and the credibility of the interviewees. This paper employs both directed and summative content analyses by utilising a priori theory to guide thematic coding processes. Thematic coding is defined here as a technique for revealing patterns within data. It has been adopted in this study to answer the research questions ("what, why and how"), since the data consists of the respondents' experiences and perceptions on CAS. The thematic coding starts with the initial line-by-line codes, to higher level categories, to conceptual themes. Correspondingly, the Institutional Isomorphism Theory (DiMaggio and Powell, 1983; Morgan, Campbell, Crouch, Pedersen and Whitley, 2010) was employed to guide the thematic coding. The reasoned justification for employing the theory is that the theory has been used in researching institutional practice such as CAS (Miller, 1994; Humphrey and Scapens, 1996; Scapens, 1994; Burns and Scapens, 2000; Chapman, 2009; Senaratne and Gunarathne, 2010). Apart from directed content analysis, summative content analysis was also applied. In summative content analysis, the presence and meanings of the interview texts are quantified to analyse how many times certain important "Keywords-In-Context" or themes appear in relation to the Institutions Isomorphism Theory. The methodological foundation of summative content analysis is zeta distribution in mathematics (Zipf, 1949; Li, 1992; Kali, 2003; Eftekhari, 2006; Binsardi and Green, 2012). The moral of zeta distribution is that when using summative content analysis, there will be dominant themes which will emerge based on the interview texts. Accordingly, research findings will therefore be dominated by the few most important themes as the heart of research discovery. This study

employs an NVivo software package to carry out both directed and summative content analyses by coding the interview texts into thematic categories, then applying relational analysis inside the codes.

Secondly, directed and summative content analyses are the most suitable qualitative methodologies to answer the research questions, since they are inductive approaches which explain people's perception and behaviours in social and cultural environments (Miles and Huberman, 1994; Kvale, 1996; Creswell, 1998; Denzin and Lincoln, 1998; Babbie, 2008). In addition, since a coding process was applied conceptually to the interview texts, both directed and summative content analyses can be considered as the most apposite methods (Smith, 1992; Binsardi and Green, 2012).

Fourthly, although there have been several empirical accounting research papers written on the Institutional Theory since 1990s (Scapens, 1994; Barley and Tolbert, 1997; Burns and Scapens, 2000), there has not been any empirical paper written on the use of content analysis to investigate CAS in Sri Lanka in relation to the Institutional Isomorphism Theory. Accordingly, this paper is useful for guiding further qualitative research in the application of CAS in a developing country context.

3. Research Methodology

This research employed a mixed methodology by combining both qualitative and quantitative analyses as well. During the first phase, a quantitative analysis of both primary and secondary data has been used to answer the research aim and objectives. Primary data for this study were collected from both service and manufacturing sector organisations in Sri Lanka. The population represents the organisations in Sri Lanka, names listed in the Colombo Stock Market, small and medium enterprises (SMEs) that are members of the National Chamber of Commerce, Department of commerce and some external directory listings in Sri Lanka as well. The respondents represent various sectors such as banking and finance, construction, hotel, education, and manufacturing (garments, tea, food, etc.).

The total sample size for the survey is 300 but received 180 only so far and 80 has been considered for the initial quantitative analysis to discuss later. The target sample was selected by stratified random sampling method due to the fact that this method ensures an accurate representation of the population and any important subgroups within that population. However, the respondents were the employees of any organisation mentioned above and were living in Sri Lanka as well. The selected respondents were also the members of any management level (lower management/middle management/higher management). The primary data were collected using structured survey questionnaires via emails and web. The secondary data were gathered via annual reports, industry reports, etc., especially to assess the organisational performance against the organisation's use of CAS. Furthermore, analysis was employed with the logistic model following relevant literature (D'Amato and Herzfeldt, 2008; Freund and Wilson, 2003).

During the second phase, quantitative analysis has been complemented by qualitative analysis (thematic and content analysis) to probe more detailed issues. Comprehensive face-to-face interviews have been implemented to obtain different expert opinions from target respondents to achieve an in-depth understanding on CAS. Initial analysis was carried out using the method of thematic and content analysis. Proposed sample composition for the qualitative

phase was 10 In-depth interviews and data were collected via a discussion guide. The designed discussion guide was well descriptive, which was encompassing almost all the parts of the qualitative aspect of the study especially the objectives such as triggers/barriers.

4. Findings and Discussion

4.1 An Initial Brief Quantitative Analysis in a Nutshell Using Descriptive Statistics

Before presenting a detailed description of CAS in Sri Lanka, some salient facts relating to overall CAS use are briefly summarised as follows:

The data for the study were gathered from both males and females with a cumulative total sample of 80 employees from Sri Lanka which represents 74.3% and 25.7% respectively. The respondents for this study were selected by using the stratified random sampling technique. The respondents were from the age group of 20 and above and the majority of the sample represented the age category of 30-40 years with the highest percentage of 85.7%. The results may be skewed to the 30-40 years group. Moreover, most of the respondents were from the degree level (80%) and above and all the respondents have had formal education as 'No formal education' is 0%.

As per the data, most of the respondents perceived relatively high (72%) demand for a CAS. Demand for a CAS is the willingness to adopt a CAS within an organisation at a given point of time. However, this could be biased as the majority of the respondents are current users of a CAS.

Table 01: Importance of a CAS

	%
Quality dimension	73
Ability to generate effective information/reports (internal/external	76
Innovative system	66
Easy to learn with user friendly interfaces	73
Useful in decision making	80
Be linked to the whole company	50
Easy to upgrade when needed	60

As per Table 01, the respondents perceive 'Useful in decision making' as the main important factor. 'Innovative system' which means a new or different approach or applying advanced methods/technologies to implement a system to solve a problem and to improve performances, also has not been rated comparatively high (66%) amongst all the factors. Also, 'Be linked to the whole company' has been rated low and this also could imply the fact that the system being mostly used by the finance or strategic management team in an organisation.

The respondents have further expressed their opinions on CAS, which is the core area of the study. The majority of the respondents (75.4%) have identified the following factors as the needs fulfilled by adopting a CAS in to organisations in Sri Lanka.

- Major quantitative information system to aid and coordinate collective decisions
- To survive in the intensely competitive conditions in the market
- Indicate the extent of various forms of waste to the management
- Provide actual figures of cost for comparison with estimates
- To aid decisions such as outsourcing
- Provide timely accurate reports to improve decision making
- To arrive at the cost of production or service and develop cost standards

Furthermore, Sri Lanka being an emerging economy the risk factors have been discussed as it could impact on the demand for CAS as well. The risks (Shaw, 2004; Baldacci, 2011) have been identified mainly as monetary (90%), technological and related (87%), political (79%) and social (76%).

Apart from descriptive statistics with graphical presentations, regression was also used to carry out the hypothesis testing to model the determinants of a CAS. The estimation method to test the determinants of CAS was to apply logistic regression technique.

4.2 A Model for the Relationship between Demand for CAS and the Significant Variables

Findings from the SPSS Analysis applying the Logistic regression model

(Equation $Y = \frac{(\exp(\beta_0 + \beta_1 X))}{(1+\exp(\beta_0 + \beta_1 X))} + \varepsilon$) where Y is the dependant variable, β_0 and ε are constants, β_1 is the coefficient of the independent/predictor variable X

As mentioned earlier and since it appears to be a very useful analysis technique for modelling the problems, logistic regression has been applied in order to find out the relationship model of the demand for a CAS and predictors of market competition, size of an organisation, changing dynamics, report generating quality, financial strength of the company, burden of proof of cost orientation and desire and need of the management. SPSS was used to analyse the collected data and it has run for twice (step 0 & 1) to give the final output.

Table 02: Case Processing Summary

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	80	100.0
	Missing Cases	0	.0
	Total	80	100.0
Unselected Cases		0	.0
Total		80	100.0

a. If weight is in effect, see classification table for the total number of cases.

The above table named case processing summary shows the number of observations and according to the table data the missing values are not an issue for these data.

Table 03: Hosmer and Lemeshow Test

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.974	8	.760

In order to check the fitness of the test, table 3 has shown the data of Hosmer and Lemeshow Test. The Hosmer and Lemeshow Goodness-of-Fit Test divides subjects into deciles based on predicted probabilities and then it computes a chi-square from observed and expected frequencies. According to the data given in the table 03 (p-value=0.760, the chi-square distribution with 8 degrees of freedom), it indicates that the logistic model is a good fit. The "Exp (b)" shows the odds ratio of the row independent with the dependent (demand for a CAS).It is the predicted change in odds for a unit increase in the corresponding independent variable. If the exp (b) value is greater than 1, then it indicates that as the predictor increases, the odds of the outcome occurring increases. Conversely, a value less than 1 indicates that as the predictor increases, the odds of the outcome occurring decrease (Field, 2005). Furthermore, the odds ratios close to 1 indicate that unit changes in that independent variable do not affect the dependent variable. Therefore, the data shows that odds of using a CAS in an organisation is 20.35 times and 21.23 times higher when the variables 'market competition' and 'changing dynamics' increased by one category respectively. Similarly the odds of using a CAS in an organisation is 25.13 times higher when the variable 'desire and need of the management' increased by one category.

Consequently, the logit regression model could be used to predict demand for a CAS from the market competition, size, desire and need of the management, quality of the report generation and changing dynamics. However, market competition, desire and need of the management, quality of the report generation and changing dynamics were highly significant predictors where size has been significant but comparatively less as well.

4.3 Findings and Discussion – An Initial Qualitative Findings in a Nutshell

The findings indicate that one of the most prominent reasons for the lack of usage of CAS in organisations in Sri Lanka, especially in the financial sector such as banks, is that the institutions tend to follow the regulatory and accounting aspects of financial reporting per se rather than considering the internal reporting aspects. Conversely, this also implies that due to regulatory requirements to produce certain types of financial reports, there has been some reluctance to allocate resources to produce other CAS reports to manage the current operations and to measure the effectiveness of the current activities. Correspondingly, the institution relies on the information provided by the financial accounting reports only. However, it has been identified that when local Sri Lankan organisations merge with international organisations, they would consider implementing such systems, but only as a requirement of the agreement. In other words, the larger multinational organisations can have a similar impact on their subsidiaries or mergers and acquisitions, which could be identified as a trigger for adopting CAS.

5. Discussion of Mixed methodology Approach

As per the above discussion, the quantitative component has been useful in answering the research question raised earlier as '*What are the determinants factors for a demand for CAS with the impact of changing dynamics'*. That is, it has identified a best fitted model which depicts a relationship of the determinant factors for the demand for CAS. However, this has not been able to fully answer the initial research question, hence, leaving '*how these factors influence in a developing country context?*' as unanswered. This limitation has opened the doors for the qualitative component to enter as it could complement the quantitative component while providing some in-depth understanding for the latter part of the research question.

Qualitative data would be analysed further as per the thematic analysis which is not a complex method. Thematic analysis is a method for identifying, analysing, and reporting patterns (themes) within data. It is theoretically flexible to analyse qualitative data, hence, this approach has been adopted in this study framework to answer both 'what' and 'how' research questions mentioned earlier in this report. As the qualitative data consist of people's experiences, views and perceptions on CAS, this will assist to analyse and identify the best possible determinants of CAS and their influences in the nature of changing dynamics within a developing country context as well.

6. Conclusion

Being a working paper and as the findings are merely based on the initial quantitative and qualitative analysis, it is much vital to carry out the second phase of the study before drawing any conclusions to this research study. During the second phase, quantitative analysis has been complemented by qualitative analysis (thematic analysis) to probe more detailed issues. Comprehensive face-to-face interviews have been implemented to obtain different expert opinions from target respondents to achieve in-depth understanding on CAS. Eventually, this will lead to understand the process and how the determinant factors of a CAS perform within the changing dynamics of organisations in Sri Lanka.

Additionally, this is invaluable for the practitioners and policy makers in adopting more modern CAS to enhance the industry's competitive advantage. Moreover, with a steady annual GDP growth, a strong emerging post-war domestic market, and easy access to the booming Asian economies, Sri Lanka has developed into a powerful manufacturing player in the Southeast Asian economy. With this potential development, the country needs to look into the implementation of more robust CAS such as activity-based costing (ABC). However, further enhancement in the country's infrastructure, R&D and training development needs to be carried out to enable Sri Lankan industry and organisations to adopt a more robust CAS to enhance the country's competitive advantages. Lastly, due to the aspects of limited sampling to follow qualitative methodology (content analysis), a generalisation of the findings is restricted until the further quantitative analysis takes place for this study.

Arguably, further research could be undertaken by using quantitative analysis with a much larger sample size, such as 'exploratory factor analysis' in investigating the application of CAS in particular sectors such as public organisations in relation to the CAS implementation gap so a generalisation can be made for designing more comprehensive CAS in the country.

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